



THOMAS G. NEWMAN,
EDITOR.

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Editorial Buzzings.

Mrs. L. Harrison, of Peoria, Ills., has had a tussel with *La Grippe*. If we could have some fair weather for a few days, the sun would soon drive away the terrible plague. Nearly one-fourth of all the people in Chicago are or have been afflicted with the malady. There were 150 funerals here last Sunday. Many other places are in a similar condition.

The Large Manufacturers of comb-foundation, who use steam for melting the wax are, we believe, now doing very nearly like Mr. Corniel suggests on page 447. They keep the wax *very hot* for a long time, and in all probability do kill the microbes and spores. We commend this subject to their consideration, and hope they will be able to show that Mr. Corniel's fears on this subject are groundless. We would like to hear from Messrs. Dadant & Son, and A. I. Root, as to their heating methods, and the temperatures obtained in making comb-foundation in their factories.

High Side-Walls are demanded in Europe, when selecting comb-foundation; consequently Mills are required to make such, and it is quite a compliment to America that European apiarists send here to have Mills made for them. We have just received a sample of comb-foundation with very high side-walls made on a Mill, which was recently constructed to order by Mr. A. I. Root, for an apiarist and supply-dealer in Switzerland, and is now in transit thither. We should imagine that the walls are sufficiently high to satisfy anyone—even the most exacting. The workmanship on the Mill must be first-class, for the product is simply superb. It reflects great credit upon Mr. J. T. Calvert, the manager of the Root establishment.

Bees on Shares.

I wish to know the terms on which bees are kept on shares. 1. What percentage of increase and honey should the owner receive, when he furnishes the stock and fixtures? 2. Who should provide the honey or sugar when it becomes necessary to feed them?

Rochester, Minn. LEWIS HYATT.

Verbal contracts are always unsatisfactory; you should have every detail written out in duplicate, and have the documents properly signed and witnessed before doing anything with the bees. Each should have one-half of the honey and increase. Each to pay one-half of the cost of new hives, sections, foundation, etc.; also of the honey or sugar, if it becomes necessary to feed them.

Deseret, a name given by the Mormons to the Territory of Utah. The Mormons claim that in the language (Reformed Egyptian, whatever that is) of their sacred books, this word means "honey-bee."—*Johnson's General Cyclopedia*.

The Soiled Globe Bee-Veils are now all sold, and no more orders can be received for them. We have plenty of the perfect ones, and can fill orders by return mail.

Appropriation for the World's Fair.

The Bill to appropriate \$5,000 for the exhibit of bees and honey at the World's Columbian Fair is now before the Illinois Legislature. It was introduced on March 25, by Hon. Joseph M. Hambaugh, and was, as usual, referred to the proper committee. The full text of the Bill reads thus:

WHEREAS, The large revenues derived annually from the sale of honey by the bee-keepers of Illinois make this important industry worthy of the fostering care of the General Assembly; and

WHEREAS, A creditable apiarian exhibit by bee-keepers of Illinois at the World's Columbian Exposition, to be held in Chicago in 1893, will call marked attention to this growing industry, and greatly assist the development of the same, and thereby add largely to the material prosperity of the State; and

WHEREAS, The Illinois Bee-Keepers' Association, an organization composed of leading apiarists of the State, and duly incorporated, have petitioned this General Assembly for an appropriation to defray the expenses of making an exhibit of bees, honey and apiarian supplies and appliances at the World's Columbian Exposition; therefore

Be it Enacted, That there be and is hereby appropriated to the Illinois Bee-Keepers' Association, out of any money in the treasury not otherwise appropriated, the following sums, to-wit: For payment of expenses of making an exhibit of bees, honey, apiarian supplies and appliances at the World's Columbian Exposition, the sum of \$5,000, or so much thereof as may be required to make a creditable display.

Now, if every bee-keeper in Illinois has not already written to the Senator and Assemblyman of his district, let that be done at once, urging them to support the measure, and endeavor to secure the necessary appropriation for a creditable exhibition of the products of the bee, at the coming World's Fair.

A New T-Tin Machine has been invented by Mr. A. Beeson, a Colorado apiarist, which completes the product by one operation, and is said to be superior to anything now in use.

Spraying Fruit Trees while in bloom should be condemned by all rational persons. We are appealed to for the draft of a bill to be presented to the Illinois Legislature, making it a criminal offense, etc. Such a Bill is now before the Michigan Legislature. It reads thus:

The People of the State of Michigan Enact, That it shall be unlawful for any person to spray any fruit or other trees, shrubs, vines or plants, with paris green, london purple, white arsenic, or other virulent poisons, or to scatter upon such trees, shrubs, vines or plants, powdered london purple, paris green, white arsenic, or other virulent poisons, **while such trees, shrubs, vines or plants are in blossom, and so may be visited by honey-bees in quest of nectar or pollen.** And that any person who shall spray such trees, shrubs, vines or plants with london purple, paris green, white arsenic, or other virulent poisons, or shall scatter the poison upon the same while in blossom, shall be deemed guilty of a misdemeanor, and for the first offense, shall be punished by fine in any sum not less than five dollars, and for the second offense, by fine in any sum not less than twenty-five dollars, and in default of payment of the same, by imprisonment in the county jail not more than ninety days.

The following from Prof. Cook we commend to the attention of Michigan fruit growers:

There is a bill before the Senate of the Michigan Legislature about spraying fruit trees while they are in blossom. If enacted, it makes such practice a misdemeanor. There is some opposition. It comes on the ground of prospective injury to fruit men. Yet our State Horticultural Society, and the Grand River Valley Horticultural Society, have both unanimously passed resolutions, urging the passage of the bill. Senator Taylor informs me that if fruit men will write to their Senators, favoring the passage of the bill, it will do much good. I would urge all Michigan fruit men to do this. The petitions should come from fruit men rather than bee-men. Each person might petition his own Senator, and the Legislature in general. The last could be sent to Senator R. L. Taylor, Lansing, Mich.

A. J. Cook.

A similar bill should be presented to the Legislature in every State.

Bee-Culture in California.

The following article is from the pen of Ninetta Eames, and was written for the *Overland Monthly*, "the Representative Magazine of the Pacific Coast," an advertisement of which may be found on another page. The engravings are used by courtesy of the publishers of the *Overland*. These must have made quite plain to its readers many interesting things about the honey-product of that "land of sunshine and flowers."

Over forty years ago, in a statement made to Congress of his investigations on the Pacific Coast, Gen. Fremont ex-

pressed the belief that the honey-bee could not exist west of the Sierra Nevada. This renowned explorer but shared a prevalent opinion, based on the climatic conditions of a country whose rainless Summers seemed to imply a universal absence of the flora essential to insects of the *Mellifera* order.

In conformity with such erroneous impressions, the first extensive apiaries of the coast were established along the Sacramento River. This precinct is still prolific of honey, as statistics show that in 1887 there were shipped by rail from the city of Sacramento upwards of 100,000 pounds, nearly half of which found an Eastern market.

To-day, however, the typical beech-ranch of California occupies the high, gravelly ground of her foothills. At all seasons these elevations are bristling and fragrant with chaparral, or smoothed into velvety softness by lapping mats of clover and alfalfa. This vegetation furnishes almost inexhaustible forage for bees. In fact, no month, in these sections, is wholly devoid of honey-producing plants. Here one is sure to run



TWIN-OAKS APIARY, LOS ANGELES.—PHOTOGRAPHED BY BUTTERFIELD.

pressed the belief that the honey-bee could not exist west of the Sierra Nevada. This renowned explorer but shared a prevalent opinion, based on the climatic conditions of a country whose rainless Summers seemed to imply a universal absence of the flora essential to insects of the *Mellifera* order.

As late as the year 1865, an able writer on California's resources, unhesitatingly declared: "A farmer in this State who would successfully keep bees, must cultivate such plants as will bloom in the long, dry Summers. The hives should be set near a river or moist lowland. In the wide valleys, and on the mountains, many bees perish after the first months of Spring, unless allowed all the honey they have previously gathered."

across Lilliputian cities of hives, dotting sagey slopes, or scattered about the grateful shade of canyons, which open their arms to the opulent plains below.

In March, 1853, the first bees were brought to California. A traveler crossing the Isthmus on his way to this State, purchased 12 colonies at Aspinwall, and landed them safely in San Francisco. During the ensuing Winter, the colonies dwindled to one, which was removed to San Jose in the Spring. Here, in the valley of Santa Clara, with its prodigal provision of honey-hearted blossoms, the bees thrived and multiplied rapidly. Colonies sold for \$100 each, and honey at wholesale from \$2 to \$4 per pound.

Spurred by these phenomenal prices, an enterprising neighbor immediately

took steps to secure the importation of twenty more colonies, and two years later the "Pioneer Apiary of California" numbered 72 colonies. All of these were of the common variety known as the German or black bee, which, after all, is not black, but quite gray. The entire State, and the adjacent territories were stocked with bees from this apiary.

About this time a prominent Pennsylvania apiarist, who has since invented the Harbison hive, sailed from New York in the Northern Light, with 67 colonies of bees snugly packed in the vessel's hold. These were eventually located near Sacramento, where their thrift and fertility exceeded the most sanguine expectations of the gratified experimentalist.

For the next 15 or 20 years, apiculture went hand-in-hand with agriculture. Small farmers all over the State almost invariably owned a few colonies that paid well, notwithstanding desultory attention, and a common ignorance of their requirements. But of late years, the "bee business" has attained the



THE HARBISON HIVE.

dignity of an exclusive interest and investment. Not only is it a means of livelihood to hundreds of families, but in not a few cases it is a source of actual wealth. No other industry yields so large a profit for the outlay of capital. A colony of bees in the Winter costs all the way from one to three dollars. They begin swarming about the first of April.

Experience proved that bees were in no danger of starving in this climate, so long as they haunted the alternate flowers of mountain and *mesa*. Those localities are seldom nectarless, even in the driest of Summers. It takes but a modicum of moisture to bring a riotous crop of bloom on the alfilerilla, sage, sumac, buckwheat, hoarhound, flax,

golden-rod, and *yerba santa*, on which the little creatures work with an abandon of enjoyment.

California's hilly regions are the Palestine of the New World. Most of their present harvesting is done by myriads of blissful bees; but the time is not far distant when their infinite possibilities will command broader service than can be compassed by these marvelous insects. Already the thrifty stems and vines of the orchardist are beginning to climb up from the cultivated hills of the valleys, disputing with the apiarist the wholesale possession of these vast territories. As yet, however, the pressure upon the latter is hardly felt, and not worth a moment's anxious thought to him.

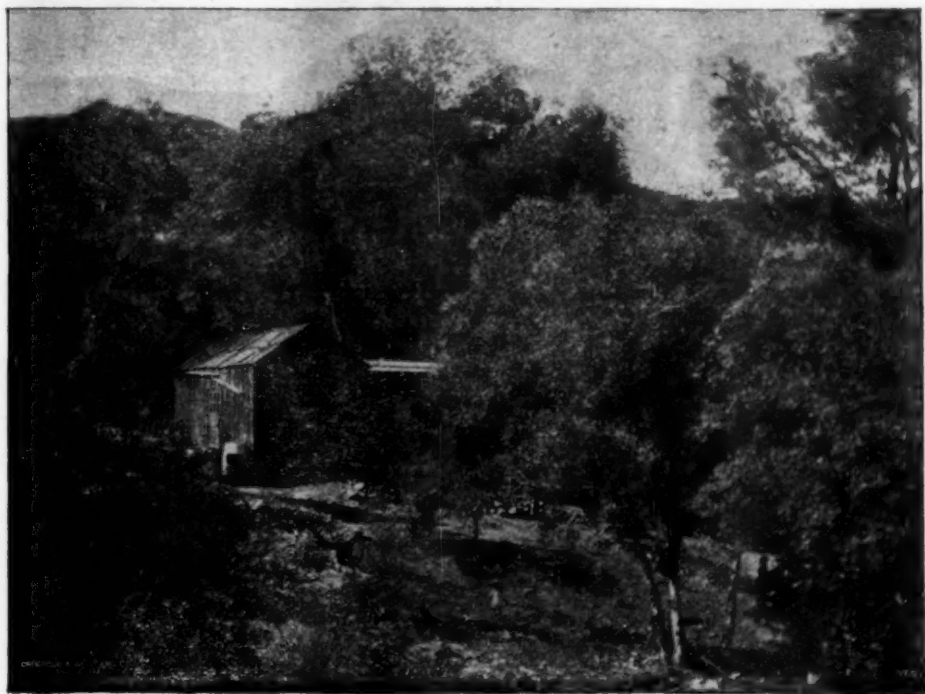
He knows the State covers an area of 158,360 square miles, and has only one valley, its great central dip, which measures at its widest point but little more than half a hundred miles from hill to hill. The colossal mountains running the length and breadth of the Coast, have their correlative depressions of valleys, steppes, and plains, but form, nevertheless, innumerable broken surfaces of uplands, with picturesque divisions and subdivisions of ridges, all offering the essential requisites for bee-culture.

The atmosphere of South California has the same delightful quality so enthusiastically extolled by Judean travelers. It is due in part to a warm current in the ocean near the coast line, and the contiguity of the Mojave and Colorado deserts, whose fiery furnaces dry the moisture from the winds ere they are fanned back, warmed and purified. Then, again, a marked climatic effect is produced from the singular conformation of the mountain ranges that in a measure separate the southern portion of the State from the rest of the continent. They are mightier than Lebanon's, and are prodigious points of reflection and convergence of the sun's rays.

The Italian bee has fast superseded the German black variety in California, and is now the most universally esteemed. It is supposed to be the "variegated golden bee," of which Virgil sang a century before Christ. It is worthy of such honor, being a beautiful insect, with three golden girdles about the polished satin of its jacket. The Italian bee is a native of the province north of the Gulf of Genoa, and in Europe is known as the Ligurian bee. It is hardier and more amiable than the black bee, besides having the immense advantage of being a better defender of the hive. In every instance a strong Italian colony is able to overcome its most redoubtable enemy, the

moth. At one time in this State, Italian queen bees brought \$100 each. They are shipped through the mails in wooden cages covered with wire-cloth. Eight or ten workers always accompany the queen in transportation, to insure her warmth and companionship. In 1878 the Syrian and Carniolan bees were first introduced into California by prominent apiarists, and are recently growing in favor. Eminent authorities in Europe and America declare the Carniolan to be undoubtedly the bee of the future, but

The wax-makers are astonishing little gymnasts. They cling together in a series of intersecting chains that form a sort of curtain, which is motionless except for the fluctuations imparted to it by the exertions of the inside layers. While officious comrades assist the pollen-bearers to unload their golden pellets, the latter slowly fan themselves with their gauzy wing; the wax-bringers, wagging their bodies from side to side, run to and fro in their efforts to dislodge the scaly particles on their abdomens;



THE BEE-RANCHER'S HOME.

in this climate the Syrian and Italian give more uniform satisfaction.

Here, as elsewhere, the Langstroth hive, variously modified, is a general favorite, though on many ranches it is being superseded by the Harbison. The latter has a door that opens like that of a cupboard. This is often made of glass, through which the bees can be seen at their divers labors. The upper chamber is reserved for the sections of comb honey, and the lower for the brood. It is a curious and fascinating spectacle—this interior of a bee-hive.

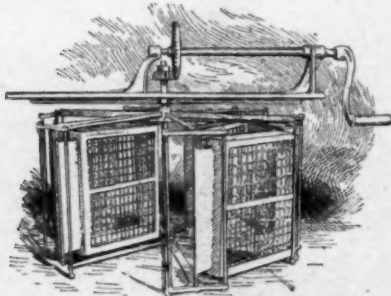
honey-carriers deposit their burdens in newly-made cells; zealous workers remove the offal and litter, and one and all rudely shuffle unsophisticated young bees, or tease and bite the lumbering drones, which seem to be in everyone's way.

The "frames" used for comb-honey are constructed of the soft white timber of basswood and poplar. As neither of these trees belongs to California, apiarists send East for their frames. When filled and capped the sections are glassed, and fitted into strong shipping crates, ready for transfer by land or sea. One

of Ventura's apiarists not only sees to the packing of his tons of honey in the cars, but afterwards boards the train and personally superintends their transportation to an Eastern market.

In all extensive apiaries, machines are used to simplify certain processes connected with the business. Of these the most important is the extractor. This happy invention is based on the principle of centrifugal force, and was suggested to Herr von Hruschka, of Germany, by witnessing the honey thrown from a piece of comb which his little son was swinging from the end of a string.

The reversible extractor consists of a large tank of galvanized iron, in which is hung a wire frame-work made up of



THE EXTRACTOR BASKETS.

four baskets. In these the comb is placed, after it is first uncapped by one or two dextrous strokes of the honey-knife. By means of a crank the baskets are then set in motion, and their rapid revolutions cause the honey to fly out into the tank. The combs are reversed, and the other side emptied in like manner before returning them to the hives.

If the forage is abundant, the combs will be refilled and capped in six or eight days, when the extracting process is repeated. A careful hand can gauge the machine so as to eject the nectar without injuring the larvæ, should the comb have both brood and honey.

The extracted-honey in the tank is usually drawn off into 60-pound tin cans, which are shipped in the cases. Shrewder apiarists adopt showily labeled glass jars and jelly-cups, through which the transparent contents are displayed to great advantage. It is the purest of all sweets, and the majority of California bee-men do not buy a pound of sugar throughout the year.

Everyone knows that honey comb is indigestible and innutritious; yet so inviting is its appearance, that it is no easy

matter to create a like appreciation of the extracted article, though it be equal in color and flavor. Unfortunately there still exists a reasonable prejudice against the old-fashioned "strained" honey, which reflects more or less discredit on the extracted, which is now put upon the market.

San Diego, whose drouth is the problem of agriculturists, is admitted to be the very paradise of the honey-bee. The pioneer apiarist here owns 6,000 colonies of the best imported varieties. His numerous ranches are scattered throughout the county, each numbering from 200 to 300 colonies. Unless urged by hunger, the usual range of a bee is two miles, so it is poor economy to crowd too many colonies within that radius.

In 1884, there were shipped from this port 1,000,000 pounds of honey, one-half of which was in the comb, and 55,000 pounds of wax. No account was made of home consumption, which would have added thousands of pounds to the above figures.

San Bernardino's honey product the past year was nearly 400,000 pounds; while Los Angeles county sent out 1,037,000 pounds, and Ventura upwards of 520,000 pounds the same season. In 1884, an exceptionally good year, the honey export from this State reached as high as 9,000,000 pounds.

The entire amount of California honey furnished home and foreign markets in 1887, was 4,647,000 pounds. The shipments by sea direct were 3,700 crates to England, 600 to France, and an aggregate of 1,300 crates forwarded to Australia, China, Hawaiian Islands, and British Columbia. Two thousand more crates, destined for the European market, went overland to New York and New Orleans. The total honey product marketed here in 1889, was nearly 4,000,000 pounds.

Most of this is gathered from different species of sage, that tuft the hills often to their steepest summits, and extend far down the slopes into the valleys. This sage honey is as delicious as that taken from the wild thyme of Hymettus and Galloway, or the nectar from the rosemary of Narbonne; and more translucent than the clover honey of Cumberland and Lancaster, and more finely flavored than the celebrated honey of Atacama.

During a favorable season, bees in California will average 200 pounds of honey to a colony, but 75 pounds is considered a profitable yield. A Los Angeles apiarist, in one year, took 1,000 pounds of extracted-honey from a

single Italian colony. If the day be propitious, a colony will gather from 10 to 12 pounds of honey. There was an active demand for California honey last season, owing to the failure of the Eastern crop. The wholesale price per pound varies from 10 to 12 cents for that in the comb, and 5 to 6 cents for the best extracted. In Wartham Canyon, near Fresno, the owner of a large apiary gathered 80 tons of honey in one Summer. Half of this he extracted and put up in 5 and 10 pound cans, before sending it to New Mexico and the territories.

those on bottom-lands, have taken a hint therefrom, and cultivated fields of lucern near their apiaries. It renews its blossoms after every re-current cutting of the stalks, thus providing a continuous feast for the bees. No caprice of the season can rob them of the crystalline globule hid in each tiny chalice. They dip into it with an eager, confident air delightful to their master, who looks on with a deep serenity; such active contentment augurs a bountiful increase of stores, and the future hides her face in roseate draperies.



A LILLIPUTIAN CITY NEAR SANTA BARBARA.—PHOTOGRAPHED BY WATKINS.

From early Spring until far in Autumn the country in this vicinity is an endless garden plat, whose nectar-laden blooms rapidly succeed each other in unnumbered diversities of form and hue.

Besides wild pastures of sage, buckwheat, rhubarb, honeysuckle, and ceanothus, there are grown acres of that admirable forage plant lucern, familiarly known by its Spanish name of alfalfa. Its purple heads arouse a passion of acquisitiveness in the bees. They crowd upon them in advance of the sun, and not till latest twilight do the tireless wanderers reluctantly drag their burden of sweets homeward.

Since the general introduction of alfalfa into Colorado, the honey industry there has become conspicuously profitable. California bee-men, particularly

The strip of country along the Sierras lying within the eastern boundaries of the State, has excellent bee-pastures, with an altitude of 5,000 feet above the sea level. Snow sometimes falls here to a depth of 10 or 15 feet, but Spring usually opens out with almost tropical warmth and brilliancy. Then the bees search the mountain swales for the downy catkins of the willow, the sunny exposures for the delicate pea-flowers of the cercis, and the dry shelves of the steeps where the red arms of the manzanita swing their pendulous pink cups.

Later on they visit the sandy levels, where dwarf phlox flames the June days through; while in July and August every busy worker devotes itself to the Alpine sage, which thrusts its golden spikes from bramble brake and gorge. Each

of its diminutive blooms is a microscopic laboratory for evolving and perfecting nectar.

Among the congregated redwoods up the savage defiles of northern Sonoma and Mendocino, and higher still in the remotest trenches of giant peaks that skirt the sea surge, the rose-bay, or *rhododendron maximum*, spreads a regal panoply of blossoms over moss-patched rocks and shadowed dingles of mountain streams. These rosy, wide-mouthed bells, spiced with a nameless fragrance, hold in their freckled throats a poisonous sweet that bees will sometimes gather.

An old bee-hunter in these heights observed that his bees waited longer than was their custom before capping combs filled from this handsomest of California's laurels. By this he inferred that the wise little chemists intended the dangerous essence to evaporate from the honey before they sealed it for future use.

In the dry year of 1877, while camping under the majestic Druid oaks on the upper Simi, we found in the springless ravines, fresh heaps of dead bees strewn the faded earth. For weary days they had traversed miles with a speed that exceeds that of the fleetest horse. The frayed gauze of each fragile wing bore eloquent testimony to the stupendous effort they had made before succumbing to hunger and exhaustion. By some extraordinary good luck; one stiffened little creature had succeeded in filling its honey-pouch ere it fell by the wayside. This pea-like receptacle was already pierced by an enormous ant, whose knotted body visibly expanded while he voraciously dipped into the contents with his spoon-like ligula.

"Twin Oaks," so called from the actual union of the trunks of two sturdy young oaks, is in a picturesque canyon of the foot-hills that sink their varying undulations in the broad, free sweep of the San Fernando plains.

Just out from the apricot and fig orchards circling the pleasant little city, the road makes a straight line to the magnificent mountains that prop the eastern horizon. All up the gradual ascent, under the dazzling mantle of the morning sun, there were billowy leagues on leagues of wild blooms, shading into every conceivable tint of orange, vermilion, and purple dyes. Much of this radiant esplanade has a bewildering strangeness to the eye, though now and then a familiar shrub or flower brought its glad surprise.

The solitude of this ravishing bee-pasture was unbroken, save by trill of bird throats and the rhythmic hum of

insects darting and floating about like live jewels. The all-pervading sunshine under the fleckless sky, the caress of wooing winds stirring the silken flowerets into a thousand sweet perfumes, the sublime uprising of the farther mountains, all gave a vivid joyance to the mind. Countless bees swept the hollows of the nectariums with their tiny proboscides, then hurried away with their precious loads. The little creatures were discriminating in their fancy, often passing the gaudiest and most odoriferous blooms, to settle on a simple flax flower or white mignonette.

At intervals, far down the slopes and up the pinnacled hills, the yucca reared its gigantic snowy plume. This wonderful liliaceous plant is often 20 feet high, a shaft of waxy blossoms, redolent as tuberoses, and of a like dead whiteness. The yucca is sparing of nectar, but notwithstanding, is not wholly valueless to the bee-man. From the fibrous leaves growing close to the ground, around its flower stem, he makes a soft brush, leaving a piece of the stalk for the handle. With this novel whisk, which is almost indestructable, he sweeps the bees off the combs that are to go into the extractor.

In June the luxuriant coloring of tropical Spring is merging into the more subdued tints of first Summer. In the browning clover there was yet an occasional *eschscholtzia*—the *copa de oro* of the Spanish—burning like a miniature fallen sun. It is the most conspicuous of all California's wild flowers. Hardly a month before, whole meads and uplands were ablaze with its splendid orange, which gave an almost painful brilliance to a noonday landscape. If one walks among these

"Poppy-plains keeping
Such dream breath and blee,"

soon after day-dawn, he sees the folded flowers trooped about like fairy knights in gray-green suits, with golden visors just visible under their high-peaked, martial caps. These they wear "tip-titled," ready to be doffed at the first approach of their great commander, the Sun. There is a consciousness of daring impropriety in slipping off this soldierly chapeau one's self, that is both captivating and repellent; man's egotism makes his alteration or precipitancy of Nature's order a keen delight to him, even though a diviner instinct cries out against the profanation.

The canyon of "Twin Oaks" is not one of those jagged, sharp-toothed gashes that lay bare to the valley all the

bleak desolation wrought by some ancient cloud-burst, but so gentle a division of the great, hushed hills that not one rib or scar stands revealed. From base to lower crowns the mountains here are rounded, padded, and carpeted by fuzzy sage and chaparral, with here and there a glimpse of cool ravines, in which are dark green oaks and silvery-columned sycamores.

Beyond a grove of steepled eucalypti, set here for bees to forage in the Winter, a charming wooded pass winds up through blossoming olives, and nectarine, peach and apple trees, bearing their green burdens of fruit. Behind a hedge of willow, a mountain stream plays a rollicking tune on the polished white stones of its bed. On its brink, long, yellow-tubed flowers were wet with the spray of its mimic waterfalls. All up the creek and over it, high swinging curtains of wild clematis and honey-suckle dropped their loosened petals on sparkling pools and banks of fringed filices. Flame-plumaged birds dived in and out of the branches, caroling vociferously above the petulant peep of their nestlings. On every hillside a galaxy of golden tulips pressed through the tasseled grasses.

To the right of the road a rude dwelling was half buried in rank vegetation. Beside it stood the "Twin Oaks" and their brother trees, under which were several hundred hives, all boiling over with zealous workers.

The honey-house at Twin Oaks is set among the thickets of laurel and sumac, whose buds were reddening toward adolescence. Inside the building were stacks of framed honey comb against the rough plaster of the wall, and jars of extracted-honey so clear that ordinary print could be easily read through them. All the work of extracting, canning, and the making of foundation, is done in this clean apartment. The room is usually kept darkened, and at a temperature of 85 or 90°, so as to hasten the process of ripening the honey.

A Bee-Keepers' Association has recently been started at Los Angeles for the mutual benefit of bee-masters throughout the southern counties. Its members aim to bring about better prices, to enforce proper gradations as to quality before marketing, to open up new markets, etc.

It is suggested by this enthusiastic

body that the State University be given its Professor of Apiculture, who shall devote his time to experiment and instruction in the delightful and profitable study of the rearing of bees. Long ago the State of Michigan took this course at her University, and to-day she reaps a rich annuity from her Apicultural Department, though she lacks the territory of perpetual bloom existing in California.



STONE HONEY-HOUSE.

Coming out of the canyon we found the sun had set. Already the great valley was twilight-cast, and a dissolving warmth and balmi flooded the atmosphere. Far off, a low sea-line of mountains were dimly traced on the crimson screen of the western sky. Nearer, the massive heads of the Santa Susanna ridge were pillowed on pink, woolly cushions of clouds, and San Fernando's venerable peaks had donned nightcaps of fog.

The flocks of meadow larks skimming the openings chorused their rich soprano, quails scudded and chattered in the underbrush, a mocking-bird chanted a plaintive note from a sheltering elderberry bush, and down the road, his crest erect, and long tail hoisted sail-wise, a tall chaparral cock raced on before with incredible swiftness.

On the last drowsy poppy by the way a belated bee, heavily swathed with pollen, fell a victim to the murderous beak of a king-bird. This was but one of the mournful tragedies of a bee-pasture, for with the bee as with man, Death often lurks among the flowers of life.—NINETTA EAMES, in the *Overland Monthly*.

Queries and Replies.

Purity of Italian Drones.

QUERY 759.—Will queens reared from pure Italians, and mated with black drones, produce pure Italian drones?—Mc.

Yes.—M. MAHIN.

Yes.—H. D. CUTTING.

Yes.—EUGENE SECOR.

Yes.—DADANT & SON.

Yes.—MRS. L. HARRISON.

I say, yes.—JAMES HEDDON.

Practically, yes.—C. C. MILLER.

Comparatively, but not absolutely, pure.—A. B. MASON.

Some writers say not. I believe, however, that they do.—J. M. HAMBAUGH.

Those best qualified to judge say that the drones will be pure.—R. L. TAYLOR.

Theoretically they do; but the practice and the theory do not agree.—G. L. TINKER.

They will not; as can be readily ascertained by mating such drones and pure Italian queens.—C. H. DIBBERN.

The question has been debated. According to the law of parthenogenesis, the drones would be pure Italians.—J. P. H. BROWN.

Enough so for all practical purposes in an apiary worked for honey; but not absolutely pure, according to my way of thinking.—G. M. DOOLITTLE.

It is claimed they will, but I am one of the doubters. There is not room in this column to give my reasons, but they will be found in back numbers of the bee-periodicals.—J. E. POND.

According to the best entomological deductions, a pure blooded queen should produce pure males of her own race, no matter what her mating might be. But during my long experience as a bee-student and queen-breeder, I have observed some things that leads me to believe that the mating of a pure queen does effect her male progeny, which will show in a practical way whether we can understand it or not.—G. W. DEMAREE.

According to the theory of parthenogenesis, a pure queen will produce

pure drones, no matter what her mating may have been. There are some who dispute this, however, and they give good reasons for their position.—THE EDITOR.

Deep or Shallow Frames.

QUERY 760.—What are the main advantages of the Simplicity frame over one of square build, like the American or Adair? My own inclination is towards the latter, since the queen lays in a circle, and also in wintering, a brood-chamber 12x13x12 inches would give some 7 cubic inches less to keep warm than one 18x12x10 inches. I winter my bees on the summer stands.—Va.

I prefer a shallow frame.—M. MAHIN.

I prefer a large surface on which to put supers, and I like to be in the fashion.—C. C. MILLER.

Ask Father Langstroth, A. I. Root, or some hive maker, for "I don't know."—MRS. L. HARRISON.

No advantage unless more use them. I prefer Langstroth frames, because more use them, else I like square frames the best.—A. J. COOK.

For the South, a frame embracing a parallelogram, like the Langstroth, is the best shape. But I have used closed-end frames since 1871.—J. P. H. BROWN.

It now seems pretty well established that a two-story hive of shallow frames, 7 or 8 inches deep, is safer in out-door wintering than any deep frame.—G. L. TINKER.

They are more easily taken out and put in the hive, less liable to break down in hot weather, or in moving, and the brood is nearer the surplus receptacles.—J. M. HAMBAUGH.

Various methods of management require different styles of frames. While many prefer the Simplicity, others would not use it, and are successful with the deep frame.—H. D. CUTTING.

Your queens do not always do what is best. Death and failure are as natural as life and success, and just as commonly met with. The shallow frame most conserves the warmth of the colony in Winter.—JAMES HEDDON.

In Spring, queens do not lay in a circle on account of the cold of the lower part of the comb; in Winter, the provisions

in the square comb being at the upper part of the comb, the heat is lost in warming it.—CHAS. DADANT.

This matter is largely an individual question, but the fact that the great majority use the shallow frame, is a strong argument for it. This column cannot afford space for reasons why I prefer the shallow frame.—J. E. POND.

I claim that the Simplicity frame, on the whole, has no advantage over the square form of frame. For this reason I use and recommend the Gallup form of the Langstroth frame. The Simplicity frame is only that in name.—G. M. DOOLITTLE.

The Simplicity frames, being shallower, present a larger space on top for the placing of sections, and, being longer, the bees can increase the brood-nest by going along them instead of over them. An article would be required to explain fully.—R. L. TAYLOR.

They give more top room for section honey. In other words, a shallow hive is better to get the bees to store in supers, as they do not have so much capped honey to run over to reach them. The queen laying in a circle is all right, but she will lay just as readily in a very much flattened circle. If the bees are properly prepared, I do not think the shape of hive makes much difference about wintering.—C. H. DIBBERN.

I might answer your question by citing the fact that after volumes have been written on this subject, the Langstroth form of frame—that is longer than deep—has steadily gained in popularity, and the facts show that it is in more common use at this time than all other forms of frames put together. Such a general preference for a frame longer than it is deep, ought to count something in their favor. We do not make hives to winter bees alone—we want a hive that is adapted to honey production. Your climate is much the same as mine, and a practical test will convince you that your "inclination" is in the wrong direction. In a warm climate (and anywhere, in fact), we want a large surface at the top of the brood-nest for the surplus cases.—G. W. DEMAREE.

The "Simplicity" hive takes a Langstroth frame, and that style of frame is preferred because it gives more surface for supers, when comb-honey is desired; and, being shallower than the Adair, Gallup or American frames, it induces the bees to enter the supers earlier.—THE EDITOR.

Topics of Interest.

Foul-Brood Spread by Comb-Foundation.

S. CORNIEL.

The opinion is held by prominent bee-keepers, both in Europe and America, that the contagion of foul-brood may be communicated by the use of comb-foundation made from the wax of infected colonies. Instances are given in which the reasons for believing that the disease was conveyed by this means seem very strong. Other bee-keepers, equally prominent, believe that the degree of heat necessary for rendering the wax, and for manufacturing foundation, is sufficient to remove any taint of disease it might contain.

The facts required to settle this question have not yet, so far as I can learn, been determined. They are: First, the lowest degree of heat which will invariably kill the spores of bacillus alvei when in the most resistant condition; and, second, the highest temperature to which wax is invariably raised in the processes of rendering combs and making foundation.

In the absence of information regarding these matters, we may use facts which have been determined as to the death points of other microbes, to assist us in avoiding live germs in the brood-cells built on foundation furnished to our bees.

Before proceeding further, let it be kept in mind that the seeds of some vegetables are killed by a momentary exposure to the temperature of boiling water, while others will withstand it for hours. The germs of the air vary as much, among themselves, as the seeds of the botanist. In a dry, ripe state, both seeds and germs resist extreme temperatures better than when normally saturated.

Let it be borne in mind, too, that there is the same sort of difference between the fully-developed microbe and its spores, or germs, that there is between the fully-matured vegetable and the tiny seed from which it grew; also, that the death point of microbes is the maximum temperature at which they can live, or the minimum temperature at which they cease to live. It is settled that the death point of the least resistant fully-matured microbes, is 104°.

It has been proven that germs, as compared with the fully-matured microbes,

possess a power of resistance to heat in the proportion of 11 to 6. Therefore, as 6 is to 11, so is 104° to 191°, which is the minimum death point of spores. We had better stick a pin just here, because, unless it can be shown that the spores of foul-brood are more sensitive to heat than any others hitherto examined, they are certainly not killed by a temperature lower than 191°.

It has been ascertained that the death point of the most resistant fully-matured microbe is 140°. Bearing in mind the above ratio, the death point of the most resistant spores is 257°. Pasteur found, in practice, that this temperature was required to kill spores in a dry state. We may infer, then, that so far as investigations have gone, the range of temperature for the death point of spores is 66°—that is to say, from 191° to 257°.

Wax melts at a little lower than 145°. When it is rendered in the solar wax extractor, it is probably not heated above 160°. In sheeting it for foundation, the wax is melted, and kept at a temperature as near the congealing point as possible. There is good reason for believing that foundation is sent out which has never been heated up to 190°, much less 257°. It is highly probable that such foundation would contain live germs of foul-brood, if made from the wax of foul-brood combs. Since it is not known that the death point of the germs is lower than 257°, and since it is certain that no manufacturer heats the wax up to this degree, it is possible that all foundation made from infected wax may contain live germs of foul-brood.

In arriving at this conclusion, I have considered what may be said in favor of sterilizing the wax by the process of rendering the combs in boiling water. The advantages of Tyndal's method of destroying obdurate germs by the process of discontinuous boiling, will not apply here, because that process requires that at some point in the operation, the germs shall be brought into contact with the water, and become saturated with it. Germs coated with wax could not meet these requirements.

Since, as has been shown, there is no certainty that foul-brood germs are killed by any temperature lower than 257°, and since this degree of heat cannot conveniently be applied to wax—and if it could, would probably injure it—the question arises, how shall we avoid the danger of starting the disease in our hives, and continue to use foundation purchased from others?

Fortunately, facts have been ascertained with respect to killing the spores of other microbes, which, I think, may help us out in this case. It has been ascertained that a long exposure to a lower temperature produced the same effect as an exposure to a higher temperature for a shorter time. "For example, speaking roughly, an exposure of an hour and a half to a temperature of 212° appeared to be equivalent to an exposure of 15 minutes at 228°."

What I would suggest is that the manufacturers of foundation place their wax in a wooden tank within a tank, the space between the two to be filled with water which shall be kept heated up to 200° for several days, in order to roast to death any spores the wax may contain.

A cubic foot of wax weighs about 60 pounds. A tank 3 feet wide, 4 feet deep, and 6 feet in length, would hold 2 tons, a quantity probably sufficient for a single batch of foundation anywhere. Manufacturers who use steam could adopt this method without much trouble. The expense of keeping up steam would be the chief addition to the cost.

That there is danger in the use of foundation, such as is now placed on the market, I firmly believe. That the above method, if faithfully carried out, will sterilize the wax, there can be little doubt. Whether it is the only method, or the best one, time will show. When bee-keepers pay over their good, clean cash, they should insist that the foundation they receive shall not be the means of starting disease in their apiaries. If the danger were fully realized, and generally known, the manufacturers of foundation would be obliged to adopt some method for sterilizing their wax, which would be infallible.

Lindsay, Ont.

Ohio State Bee-Keepers' Convention.

MISS DEMA BENNETT.

SECOND DAY—FEB. 11.

The first subject on the programme for the day was "Queen-Rearing," by Dr. L. G. Tinker, but as he was not present his essay was read by W. Z. Hutchinson, when a general discussion was had by the members.

J. B. Hains—I do not agree with the essay about the second lot of cells. I think the second lot better than the first.

W. Z. Hutchinson—I agree with Mr. Hains. The second lot is better, the

third inferior, and the fourth—no good. I think the cutting of combs is as well where there are plenty of eggs.

J. B. Hains—If there are only a few eggs in a hive—in many cases the eggs are taken out—is it not probable that eggs are used to help prepare royal jelly? We find, in a hive that has cast a swarm, plenty of brood in all stages. I prefer to raise queens from a vigorous queen, rather than to have one shut up in a cage, and I object to tobacco.

E. E. Hasty—There are five of us who were on committee, and the President besides, in the committee room, when the landlord came in and passed around the cigars, but no one took any, as they all replied that they did not smoke. In regard to the eggs, if the bees use them in any way for royal jelly, they must eat them to help secrete the jelly. We do not know the exact relation of royal jelly and the food that is fed to the larvæ. If you stop feeding larvæ, and still give them eggs enough to feed queen-larvæ, it might be well.

E. R. Root—I do not want tobacco unless to prevent robbing—chloroform will do the same.

“Has any one present had any experience in hatching queens above a queen-excluding honey-board?”

W. Z. Hutchinson—I have started them, but never left them to mature.

E. R. Root—It will work, but our man thinks it too much trouble.

J. F. Moore—I tried it, by having cells above and below at the same time, and it worked very well.

W. Z. Hutchinson—I can see some advantages in raising a queen above the honey-board—you can utilize more heat, and in the Fall you can unite them better. Mr. Alley starts cells in one colony and transfers them.

Mr. Edmonston—I use the Alley method. I have often had every cell started, and think that sometimes all were hatched. Sometimes the eggs will be missing. Set rules do not always work.

Mr. Hutchinson—I have had queen cells lay out-of-doors two days, and hatch.

Mr. Edmonston—One time I had a queen cell lay on the sitting-room window for several days, when my little girl brought it to me saying, “Oh, pa! There is something alive in this peanut,” when I saw, to my surprise, that it was a cell with a queen in it just gnawing out.

J. B. Hains then read a short essay on “Spacing of Frames.”

E. R. Root—I think $\frac{3}{4}$ of an inch is too close.

Dr. Mason—One and one-quarter inches, from center to center, is right.

E. E. Hasty—I think if too close spacing is used, that you crowd the bees out to loafing in the porch.

W. Z. Hutchinson—If there is no work, I had just as soon they would loaf about the porch as in the sitting-room.

Dr. Mason—If the frames are close, they will go above to put honey.

F. A. Eaton—If too close to let the air circulate above the brood, the bees will go out to give the brood air, so as to keep it from smothering.

W. Z. Hutchinson—If the brood will smother, how will it be when the bees all go in of a cool night—what then?

“Will close spacing prevent drone-rearing?”

E. R. Root—I think that close spacing discourages drone-rearing.

Mr. Bleesch—I have found that smoking the bees several times causes them to go into the supers, to remain and go to work.

W. Z. Hutchinson—I can see no object in driving them in, when there is no honey coming in.

F. A. Eaton—I think there is a point there; would they not fill themselves with honey, and go up and go to building?

D. R. Morris—One and one-quarter inches, from center to center, is right. I never had trouble to get them to work in the supers?

The secretary then read letters from E. M. Bennett, of South Charleston; and Henry Beatty, of Massillon, O., requesting to be admitted as members of this Association, which request was granted by unanimous vote. Letters were also read from H. F. Moore and J. S. Barb, enclosing dues.

On motion of E. R. Root, W. Z. Hutchinson was made an honorary member of this Association.

Cincinnati was decided upon as the next place of meeting, the time to be decided upon by the Executive Committee.

The election of officers then took place, with the following result:

Charles F. Muth, of Cincinnati, President.

Miss Dena Bennett, of Bedford, Vice-President.

S. R. Morris, of Bloomingsburgh, Secretary and Treasurer.

The committee on the Columbian Fair, reported as follows:

“Your committee, appointed to consider the subject of the Ohio Bee-Keepers’ share in the Columbian Fair, have unanimously agreed to recommend to this society the adoption of the plan proposed

by our worthy President, in his address of yesterday. The plan was presented, and explained by him, at the Michigan State Bee-Keeper's Convention, at Detroit, a few weeks ago, and adopted by that convention, and it is not necessary to repeat it here. We recommend that an appropriation of \$2,500 be asked of the Legislature, with which to defray the expenses of an exhibit, which shall be worthy of the Buckeye State, and compare favorably with our neighbors.

"As to the matter of a committee to take charge of the collection, and the arrangement of the exhibit, your committee agree that one person is preferable to more than that, and if that one person needs assistance let him choose his help, subject to his instructions. For this committee we would recommend as our first choice, Dr. Mason, because he has a reputation in this line, and would do our State credit.

"He has been recommended for General Superintendent of the Bee Department of the entire Fair; and if he has this position, it may be out of the question for him to act as State Superintendent.

"In case the expected engagement of Dr. Mason should be consummated, we recommend as State Superintendent, in charge of the collection and arrangement of our exhibit, under advisement of Dr. Mason, Miss Dema Bennett. She has been recommended for this position by the Progressive Bee-Keeper's Association, located in Northeastern Ohio, and has been our efficient Secretary and Treasurer for the past two years.

"J. T. CALVERT, *Chairman*."

J. T. Calvert then read a very interesting essay on "Freight classification for bee-keepers." He also gave answers to questions on the subject, which showed how well he was acquainted with the matter in hand.

"The advantages of using foundation," were given in an essay by W. Z. Hutchinson.

E. E. Hasty—In these late years, bee-keepers have not got their money back on foundation.

J. B. Hains—I have not, on that or anything else. I bought it when it was \$1.50 per pound, and as long as I keep bees I shall use foundation. I will do what is right by the bees, and if I do not get returns, it will not be my fault.

S. R. Morris—I have used full sheets for several years, to decided advantage. This season I have received \$5 for every \$1 invested, by actual itemized account.

F. A. Eaton—I have made it pay, and my book will show it. I use full sheets in sections.

Mr. Bleesch—In case you put in full sheets, and honey is coming in slow, do not the bees eat it?

F. A. Eaton—Not unless it is put in too late.

E. E. Hasty—If you are having from 6 to 12 pounds per day, I say use full sheets; but if only 2 or 3 pounds, it does not pay.

W. Z. Hutchinson—I understand this about as Brother Hasty; I think we can use foundation to enormous advantage by using full sheets, when honey is coming in plentifully.

Mr. Harris—I think half a sheet of foundation pays best.

W. Z. Hutchinson—If half a sheet pays, why will not a full sheet pay better?

(To be continued.)

Poplar Trees and Honey—Foul-Brood.

WM. A. BARCLAY.

An inquiry arose some months ago as to whether the poplar furnished any honey for our bees. I was somewhat surprised that it was not sooner replied to, and was glad to note the very proper answer given by Rev. M. Mahlin in the last BEE JOURNAL.

He is entirely correct when he classes the honey-bearing tree as *Liriodendron Tulipifera*. It is not, properly speaking, a poplar, but belongs to the order of magnolias. The mistake probably occurred from the fact that throughout our Middle States, the tree is almost universally called the yellow poplar.

In the fourth edition of "Landscape Gardening and Rural Architecture," page 255, by the late lamented A. J. Downing, will be found a most satisfactory description of this beautiful tree, which Mr. D. asserts, "that, in his estimation, is decidedly the most *stately* tree in America," and mentions a specimen, three and one-half miles from Louisville, found by the younger Michaux, "which measured, at 5 feet from the ground, 22½ feet in circumference, with a corresponding elevation of 130 feet."

Mr. Downing describes the tree thus: "The foliage is rich and glossy, and has a very peculiar form, being cut off, as it were, at the extremity, and slightly notched and divided into two-sided lobes. The breadth of the leaves is 6 or 8 inches.

The flowers, which are shaped like a large tulip, are composed of six thick, yellow petals, mottled on the inner sur-

face with red and green. They are borne singly, on terminal shoots, have a pleasant, slight perfume, and are very showy. The seed-vessel, which ripens in October, is formed of a number of scales surrounding the central axis in the form of a cone. It is remarkable that young trees under 30 or 35 feet in height, seldom or never perfect their seeds."

Should anyone who has never seen this tree, come upon it when it is in full bloom, he would be measurably astonished at its beauty. I do not think that there is any tree in our forests that can bear a comparison with it, and, besides, the beholder would not for a moment question its honey-yielding properties—I have seen its beautiful tulip-shaped flowers (which are 2 inches, or more, in depth) heavily laden with bees, which were so earnestly struggling for the honey which the flowers contained, that they actually turned the blossom upside down, its natural position being erect, like that of the tulip, which it very much resembles; and indeed Mr. D., in his beautiful description, frequently speaks of it as the "tulip tree."

I am very sorry to state that we find this tree somewhat difficult of transplantation, which, I think, arises from the fact that, like our hickories, it has a top root, and all trees of this class I find difficult to transplant.

I will close by saying that while Mr. Downing speaks of this tree as the white-wood or tulip tree, and sometimes the yellow poplar, he classes it as a magnolia, *Liriodendron tulipifera*.

FOUL-BROOD.

The valuable article on this malady on page 347, by C. J. Robinson, Richford, N. Y., was most welcome. I have had but slight experience with this trouble, which, most fortunately, I overcame, and I hope never to see it again. Nevertheless, should the occasion require us to again deal with it, how can we so properly prepare ourselves for its destruction as by reading the experience of those who have successfully treated it?

A perusal of Mr. Robinson's last article, led me to make reference to other articles on the same subject, and from the same pen, which may be found in the last volume of the BEE JOURNAL, pages 326, 518 and 726, and I must say that should I, unfortunately, be called upon again to battle with this scourge, I feel better equipped to encounter the enemy, and freely confess that my thanks are due to Mr. Robinson for the valuable information he has afforded us on this truly vexed question.

Another thought has just occurred to me: Had I not carefully preserved my BEE JOURNALS (which I bind each year, as they come to hand), how would I have been enabled to make the references before spoken of, and how obtained the information sought after.

I am proud to state that I have been a subscriber to the AMERICAN BEE JOURNAL (and an occasional contributor) since Volume I, No. 1, and all of them have been carefully preserved and bound, with the exception of a very few missing copies, the loss of which I very much regret.

Beaver, Pa., March 16, 1891.

Trade-Marks and Marketing Honey.

BENJ. E. RICE.

The above seems to be the topic under consideration at the present time, but as for myself, I would not give 5 cents per bushel for all the trade-marks one could get up for all *bee-keepers to use*, as I have one of my own, that answers all purposes, and it reads like this: "Warranted Pure Extracted-Honey, from the Apiary of Benj. E. Rice, Boscobel, Wis."

By its use I sell all the honey that my bees can produce each year, and one year I sold, in my home market, 18 full barrels of extracted-honey, besides about 300 pounds of comb-honey.

I cause my mark to be placed on every receptacle—yes, and every pound section—that leaves my honey-house or apiary, and I really think that this idea of adopting a trade-mark, to be universally used by bee-keepers, will create more dissatisfaction than has already been caused among them.

Then, if one wished to dispose of adulterated honey, all they would have to do would be to attach the bee-keepers' trade-mark to it (which, of course, guarantees purity), and it would go like hot doughnuts in Winter.

It is often said that there is no one so sharp but that there is some one else his equal, so if any kind of a trade-mark should be designated by some one, it would be only a question of time before a duplicate of it would be used by others, and I believe the best and safest way is for each bee-keeper to have his own private mark or label. Then, if any of those dishonest honey adulterators should counterfeit it, there would be only one that would really be affected, instead of all bee-keepers.

By all means, let the trade-mark theory be dropped, unless they could use it in the Union—that being a much smaller body.

Boscobel, Wis.

[Do not be alarmed, Brother Rice. That "trade-mark" proposition was very absurd; but it will never be adopted by the Union as long as the present Manager has anything to say about it. Such a feature would be its death-blow. —ED.]

Illinois Convention—Where to be Held.

GEO. F. ROBBINS.

Dr. Miller (page 374) thinks that the meetings of the State Association should be held at Chicago, but admits that "the wish may be father to the thought." From the first I naturally wanted the Convention at Springfield, but I acknowledged to myself that it might suit the majority better to go to Chicago. When I got into the Convention I found the prevailing thought was, as I understood it, that the meetings should all be held at Springfield.

The second article, I believe, of the Constitution provides that "its principal place of business shall be at Springfield." Just what that means I cannot understand, unless it is that the meetings of the association shall be held there. I confess that I think that, in justice to all, the different meetings should be held in different places, although there is some reason why it should be a fixture at the capital.

As between Springfield and Chicago I can give three good arguments in favor of the former. The first is, it seems that the bee-keepers are pretty evenly distributed over the State. I was inclined to think that the majority of them were in the northern half, but some of the brethren at the Convention nearly convinced me that Springfield was about the center of gravity, with the preponderance, if anything, in favor of the south.

The second argument is, our proposed union with the vague thing—existing as yet only as an idea—known as the Farmers' Club. That idea, I believe, contemplates regular annual meetings at Springfield, which would, of course, locate the Bee-Keepers' Association there with it.

The third argument is a negative one. Chicago would very likely draw a larger

number, but, as Mr. Heddon intimates, a large proportion of them would come from adjoining States. Well, Chicago, has a Bee-Keepers' Convention about every year anyway, and probably has more attendants from Michigan than Southern Illinois. But we must remember the prime object in the organization of a State Association, was to further the interests of the apiarists of the State with regard to an exhibit at the World's Fair. The best place to act in this matter is at the capital.

Besides, while the presence of Mr. Heddon, and others from sister States, would be a great acquisition, and we would heartily welcome them, they could not be specially interested in our cause, and in that respect they would add nothing to its value. On looking over the above I see it is not altogether a negative argument after all. But I have done. If there is any other side, let us have it.

Mechanicsburg, Ills.

Incubating Poultry Eggs in Bee-Hives.

ARTHUR T. GOLDSBOROUGH.

Five or six months ago I wrote to you that I believed the warmth from a colony of bees might be used to incubate poultry eggs, and after experimenting would give you the results. Although I made my inner case nearly a year ago, I have had no time to test it.

I shall now give you my ideas about it, and perhaps some of your readers might wish to test the possibilities of this new incubator. The main trouble will be to get the required heat, and I greatly fear that, except during the Summer months, the natural warmth of the colony would not be sufficient to hatch eggs. Perhaps some of the gentlemen who have tested this point, might tell us what amount of heat would be available from a full colony of bees, and if it did not reach 100° there would be no use of further investigation.

If you do not wish to use a surplus-case over the eggs, the following would be a quickly-made egg-holding case or chamber. Get a half dovetail body, and saw it in the middle. This would give you a frame 20½ inches long, 13½ inches wide, and 2 inches deep, capable of holding 50 eggs. Tack onto the bottom of this frame a thin wire-cloth, and it is ready for the eggs. You could use anything you pleased for a cover. A thin board, enameled cloth, canvas, or a

quilt or piece of flannel, to hold warmth.

Having found a full colony in an 8-frame dovetail hive, place your egg case on top. The warmth of the hive will ascend through the wire-cloth (fly-screen wire-netting would answer), and the eggs be free from bees. Of course, should the eggs hatch, another thin wire frame would have to be introduced between the egg case and the hive, to prevent stinging; or, when the eggs were about to hatch, they could be removed to a warm place, or be put under hens, as the pipping chicks would require more air.

A greater amount of warmth would be had from a colony already at work on sections in a surplus or half-body case, but the egg-frame would then have to be made a little different, and instead of having the end-pieces of the egg-case an inch or $\frac{1}{2}$ thick, they should be $\frac{1}{4}$ inch thick.

Now, nail in each end of the case or frame, a cross piece. Between this cross piece and the end-piece would be left a quarter of an inch space, allowing the bees below to ascend to the sections above. This case or frame, of course, must have a wire-cloth cover and a bee-space above, so that the bees could crawl over it and up into the sections.

As stated above, I doubt if the needed heat can be found in a bee-hive, yet the question might be worth testing, as the outlay would be next to nothing. There would be enough air and moisture, and the eggs could be turned if required.

Washington, D. C., March 22, 1891.

Bruce Bee-Keepers' Convention.

A. TOLTON.

The Bruce Bee-Keepers' Association met at Eden Grove, Ont., January 30, 1891, with a good attendance and interest, and several new members were gained.

The meeting was opened with an essay by Abram Rowand, entitled "The Bee at Home."

"Which is the best way to feed bees in Winter, to keep from starving till safe to open?" Feeding candy on top of frames was considered best.

"Full sheets of foundation or starters, which is most profitable?" The majority favored full sheets. They got too much drone-comb by using starters.

"Cellar or clamp wintering, which is considered best?" Cellar wintering, where practicable, was considered best;

should have some protection in Spring after taking out of the cellar.

"Do bees work on potato vines, and get poisoned by so doing?" None present had seen bees on potato vines.

Controlling Increase.—John Harkley practices the following plan: When a colony swarms, place swarm on old stand; turn the old hive, facing opposite, four feet at the back of swarm, so as to allow the field bees to go in with new swarm, then turn and replace beside new swarm to allow young bees to go into new swarm; then put the frames with brood wherever there is room for them. By so doing, you let your bees swarm, and still have no increase.

Some others were in favor of contracting the brood-chamber, and giving room above.

Apicultural Notes from Nebraska.

J. M. YOUNG.

All hives containing bees should be painted, and kept so. I have tried nearly all kinds and colors, and find that white paint stands at the head of the list.

I have used 2-pound cans to a considerable extent in putting up extracted-honey, and believe that the time will come when tin cans will be considered far ahead of any other receptacle now used for extracted-honey.

My bees never did work on red clover, and they are as long-tongued bees as anyone ever saw. I never saw a single bee on a head of red clover during my entire experience, and plenty of it has always been in their reach, and quite near the apiary.

Wooden kegs will leak more or less, thereby causing the hoops to get loose and slip off, and a keg all smeared over with honey is a very disagreeable thing to handle.

The *Nebraska Bee-Keeper*, for March, makes the statement that "we have no basswood forest in Nebraska." Now, look here, friend Stilson, you surely have not been along the borders of the Missouri River, known as the "Big Muddy," or you would have seen plenty of it. There is any amount of it within one mile of my apiary. I have been all along the river, for many miles above and below here, and have always found it growing plentifully along the tributaries. But unless the woodman's ax spares the basswood, we are afraid that

the honey from this source will be an unknown quantity in a few years.

When there is snow about the hives, do not disturb it until the weather is warm enough to thaw it, then just go for it and remove it as far away as you please. Working around bees in cold weather is a bad practice, especially if there is snow near the hives, for bees, when disturbed, will come out more or less, and one that alights on the snow seldom ever returns to the hive, if the weather is any way chilly. Snow is no detriment to bee-hives if the weather is cold. Do not mind it, if they are covered clear up, it will not hurt them any, but look out when old Sol comes out, and begins to warm up things.

Plattsburgh, Nebr.

Good Counsel for Beginners.

REV. S. ROESE.

Never be discouraged, although your expectations have not been realized, nor your labor repaid in dollars and cents, for the happy moments you have spent with your pets amply paid you, and should balance all accounts.

Watch carefully each hive in your apiary, notice the doings of each colony of bees, and have a full understanding of their wants and needs, at all seasons of the year, and you will seldom have to mourn over heavy losses and bad luck.

Never kill one bee, unless it is a necessity, and do not think it too much trouble to pick up a chilled bee from the ground or floor, to restore it to life again, for by so doing you may save a swarm from Spring dwindling, for one bee, to a colony, is like one cent to a dollar.

To avoid bee-stings, proceed quietly and with care, while working among your bees; do your work with dispatch, and have your hive closed before the bees become aware that you have been near.

Never disturb bees while excited, neither before nor during a thunder storm, hot windy days, honey dearth, nor while robber bees are bent on pillage.

Never work among bees without a smoker, but use it judiciously, and on proper occasions, to keep them under subjection, and prevent their anger, but in case of accidentally upsetting a hive,

the spraying of the bees with cold water will have the effect of quieting them.

When working among them for any length of time, do not think it too much trouble to protect your head and face with a bee-veil.

On removing frames from the hives, work them loose first with a small chisel or pocket-knife, also move the adjoining ones slightly, to give ample room, and prevent injury to the combs.

To remove bees from the combs, a turkey or a goose feather dipped in cold water, to brush them off with, will have a quieting effect; or shake them in front of the hive, when they will readily enter without molesting you.

Keep things in order in the alpany. Have your tools, empty hives, sections, crates, etc., in their respective places, ready for use in case of need.

In marketing honey, be honest, give full weight, offer your product for only such as it is, and never lower the price with intent to undersell a fellow bee-keeper. Let your goods recommend you, and your honor introduce you, as a true representative of the class called apiculturists.

Maiden Rock, Wis.

Points About Locating an Apiary.

WALTER S. POWDER.

In locating an apiary, it will be well to remember that hives should never be placed against houses or old fences; always leave plenty of room around the hive to stand while working with the bees and bear in mind that the intense heat from the South side of a building is liable to give the bees the swarming fever.

They should never be placed where horses or cattle constantly pass; for at times, when honey is scarce, the disagreeable odor provokes an attack, and if permitted in the inclosure, the stock are in great danger of their lives, should they overturn a hive in grazing or rubbing against it. No grass or weeds should be allowed to grow within two feet of the entrance of any hive. Much time is lost by bees falling in the grass; they may become chilled by the rain or dew in cool weather, or fall victims to toads or spiders; and returning queens are liable to fall in the grass and become lost.—*Indiana Farmer*.

CONVENTION DIRECTORY.*Time and place of meeting.*

1891.
 April 9, 10.—Missouri State, at Boonville, Mo.
 J. W. Rouse, Sec., Mexico, Mo.
 May 6.—Bee-Keepers' Ass'n. and Fair, at Ionia, Mich.
 Open to all. Harmon Smith, Sec., Ionia, Mich.
 May 7.—Susquehanna County, at Montrose, Pa.
 H. M. Seeley, Sec., Harford, Pa.

[E] In order to have this table complete, Secretaries are requested to forward full particulars of the time and the place of each future meeting.—THE EDITOR.

North American Bee-Keepers' Association

PRESIDENT—P. H. Elwood....Starkville, N. Y.
 SECRETARY—C. P. Dadant.....Hamilton, Ills.

National Bee-Keepers' Union.

PRESIDENT—James Heddon...Dowagiac, Mich.
 SEC'Y AND MANAGER—T. G. Newman, Chicago.

Bee and Honey Gossip.**Ants in the Apiary.**

Sow kaunit around the hives, and in about a week, sow again. Two applications per year, has kept my apiary free from the pest for the last three years. Try it. D. M. KETCHAM.
 Newark, N. J.

Somebody's Error.

In the notice, on page 360, of the organization of the Brookfield Bee-Keepers' Association, the President's name should have been J. B. Stanclift, instead of Lorin Starclift. Whose error it was, I do not know. J. B. STANCLIFT.
 Brookfield, Me.

Salt as a Preventive.

Last Spring I had 125 colonies, from which 4 swarms were cast during the Summer, and my surplus honey only amounted to 50 pounds. I do not dread foul-brood as much as diarrhea. In the Spring I often find considerable chilled brood, that cannot be removed from the combs, so I uncapped them, sprinkle fine salt over them, and hang the combs up until needed for swarms, and never have any bad results from such combs. I believe that foul-brood exists in apiaries that are never suspected, and it has often oc-

curred to me that salt might be a good preventive. When I am extracting, and happen to uncapped any brood, I sprinkle salt over them before putting the combs back again. E. F. MEEKER.

Duncan, Ills.

No Loss of Bees.

In the Spring of 1890 I had 22 colonies, which increased to 54 colonies, and gave me less than 400 pounds of honey. In the Fall I united them until the number of colonies was reduced to 45, and fed the bees to provide Winter stores, and shall have to feed them again this Spring. They have been very quiet all Winter, with no loss as yet. I hope for a good honey-flow the coming season. JOS. L. FLINT.

Marion, Iowa, March 26, 1891.

Bees Tearing Out Brood.

What is the cause of bees tearing out sealed brood, in patches from the size of a silver dollar to the size of my hand? I had 3 colonies do it in June and July of last year, when the combs were filled with brood on both sides.

W. B. SOUTHARD.

Lone Rock, Wis.

[Scarcity of food induces the bees to prevent the increase of the family to be felt. At such times they kill the drones, and even destroy the brood.—ED.]

Scarcely any Surplus.

I have 3 colonies, which are in good condition. We had a very poor season last year, and received scarcely any surplus. Bees are dying of starvation in this vicinity. One of my neighbors lost 30 out of 32 colonies, and others are feeding their bees. There are prospects for a good honey crop this season, for the white clover is looking well, there having been plenty of rain last Fall, and I have hopes of a good yield.

HORACE RUSHTON.

Manchester, Mich., March 22, 1891.

Poorest Season in Six Years.

I have been engaged in bee-keeping for the past six years, and last season was the poorest in my experience, the honey crop not averaging over 20 pounds per colony. Bees seem to have wintered fairly well. Mine were left on the summer stands for the first time,

without any protection except a light covering over the frames. The weather has been very mild, and bees have taken flights quite frequently during the entire Winter.

J. HAMER.

Leonardville, Kans., March 19, 1891.

State Fair Premiums.

There is evidently something wrong, either with Mr. Trego's statement on page 358, or with his advertisement. In the former, he states that he exhibited "4 one-frame nuclei," while in his advertisement he says: "Our bees took first premium at the Illinois State Fair, in 1890." The Illinois State Fair does not give any premiums on nuclei, only on colonies, and as the only colonies of bees exhibited at that time were the property of Aaron Coppin, how can Mr. Trego reconcile these statements? The premium was given to Aaron Coppin, and not to Mr. Trego.

AARON COPPIN.

Wenona, Ills.

[Mr. Trego sends us the following testimony, in answer to the above:

EDITOR BEE JOURNAL:—I have this day received a letter from J. V. Caldwell, of Cambridge, Ills., stating that he gave S. F. Trego, of Swedona, Ills., the first premium on his Italian bees at the Illinois State Fair in 1890.

S. J. ICKES, Justice of the Peace.
Swedona, Ills., March 25, 1891.

Mr. Trego adds: "Before Mr. Coppin makes any more statements, he should examine the books of the Secretary of the Fair."

The discussion regarding the bee and honey exhibit, and the award of premiums at the Illinois State Fair, having reached a stage where it has ceased to be of any interest to the general reader, and become merely a personal controversy between two or three correspondents, we have determined not to publish anything more on that subject.—Ed.]

Bee Classification.

There are three classes of worker bees in a thrifty colony, the nurse bees, the wax workers, and honey gatherers. The first duty the young bees perform is feeding the young brood. The second labor is procuring the wax and building the comb. Last, gathering honey.—*Ex.*



ADVERTISING RATES.

20 cents per line of Space, each insertion.

No Advertisement inserted for less than \$1.00.

A line of this type will admit about eight words.
ONE INCH will contain TWELVE lines.

Editorial Notices, 50 cents per line.

Special Notices, 30 cents per line.

Transient Advertisements must be paid for
IN ADVANCE.

DISCOUNTS.—On 10 lines, or more, 4 times, 10 ¢ cent.; 8 times, 15 ¢ cent.; 13 times, 20 ¢ cent.; 26 times, 30 ¢ cent.; 52 times, 40 ¢ cent.

On 20 lines, or more, 4 times, 15 ¢ cent.; 8 times, 20 ¢ cent.; 13 times, 25 ¢ cent.; 26 times, 40 ¢ cent.; 52 times, 50 ¢ cent.

On 30 lines, or more, 4 times, 20 ¢ cent.; 8 times, 25 ¢ cent.; 13 times, 30 ¢ cent.; 26 times, 50 ¢ cent.; 52 times, 60 ¢ cent.

On larger Advertisements discounts will be stated, on application.

ALFRED H. NEWMAN,

BUSINESS MANAGER.

Special Notices.

Subscribers who do not receive their papers promptly, should notify us at once.

Send us one new subscription, with \$1.00, and we will present you with a nice Pocket Dictionary.

The date on the wrapper-label of this paper indicates the end of the month to which you have paid. If that is past, please send us a dollar to pay for another year.

Systematic work in the Apiary will pay. Use the Apiary Register. It costs:

For 50 colonies (120 pages)	\$1 00
" 100 colonies (220 pages)	1 25
" 200 colonies (420 pages)	1 50

As there is another firm of "Newman & Son" in this city, our letters sometimes get mixed. Please write *American Bee Journal* on the corner of your envelopes to save confusion and delay.

CLUBBING LIST.

We Club the *American Bee Journal* for a year, with any of the following papers or books, at the prices quoted in the **LAST** column. The regular price of both is given in the first column. One year's subscription for the *American Bee Journal* must be sent with each order for another paper or book:

	Price of both.	Club
The <i>American Bee Journal</i>	\$1 00....	
and Gleanings in Bee-Culture....	2 00....	1 75
Bee-Keepers' Guide.....	1 50....	1 40
Bee-Keepers' Review.....	2 00....	1 75
The Apiculturist.....	1 75....	1 65
Canadian Bee Journal.....	1 75....	1 65
American Bee-Keeper.....	1 50....	1 40
The 7 above-named papers.....	6 00....	5 00
and Langstroth Revised (Dadant).....	3 00....	2 75
Cook's Manual (1887 edition).....	2 25....	2 00
Quinby's New Bee-Keeping.....	2 50....	2 25
Doolittle on Queen-Rearing.....	2 00....	1 75
Bees and Honey (Newman).....	2 00....	1 75
Binder for Am. Bee Journal.....	1 60....	1 50
Dzierzon's Bee-Book (cloth).....	3 00....	2 00
Root's A B C of Bee-Culture.....	2 25....	2 10
Farmer's Account Book.....	4 00....	2 20
Western World Guide.....	1 50....	1 30
Heddon's book, "Success,".....	1 50....	1 40
A Year Among the Bees.....	1 50....	1 35
Convention Hand-Book.....	1 50....	1 30
Weekly Inter-Ocean.....	2 00....	1 75
Toronto Globe (weekly).....	2 00....	1 70
History of National Society.....	1 50....	1 25
American Poultry Journal.....	2 25....	1 50
The Lever (Temperance).....	2 00....	1 75
Orange Judd Farmer.....	2 00....	1 65
Farm, Field and Stockman.....	2 00....	1 65
Prairie Farmer.....	2 00....	1 65
Illustrated Home Journal.....	1 50....	1 35
American Garden.....	2 50....	2 00
Rural New Yorker.....	2 50....	2 00
Nebraska Bee-Keeper.....	1 50....	1 35

Do not send to us for sample copies of any other papers. Send for such to the publishers of the papers you want.

Bee-Keeping for Profit, by Dr. G. L. Tinker, is a new 50-page pamphlet, which details fully the author's new system of bee-management in producing comb and extracted-honey, and the construction of the hive best adapted to it—his "Nonpareil." The book can be had at this office for 25c.

A Nice Pocket Dictionary will be given as a premium for only **one new** subscriber to this JOURNAL, with \$1.00. It is a splendid little Dictionary—just right for the pocket. Price, **25 cents**.

Supply Dealers desiring to sell our book, "Bees and Honey," should write for terms before issuing their Catalogues.

HONEY AND BEESWAX MARKET.

DETROIT, March 21.—Comb-honey is quoted at 14@15c; demand light. Extracted, 7@8c. Beeswax in fair demand, 28@29c.

M. H. HUNT, Bell Branch, Mich.

NEW YORK, March 21.—Market is bare of comb-honey. We quote: Extracted, buckwheat, 7@7½c; California, in good demand, at 6½@7¼c, and market well supplied; Southern, none in market. Beeswax, 25@27c.

HILDRETH BROS. & SEGELKEN,
28-30 West Broadway.

KANSAS CITY, March 21.—Market continues about the same; stocks becoming light; no receipts. We quote: White 1-lb. comb, at 16@18c; dark, 12@13c; California white, 2-lb., 4@15c; extracted, 6@7c. Beeswax, 22@25c.

CLEMONS, MASON & CO.,
Cor. 4th and Walnut Sts.

CINCINNATI, March 23.—Demand good for extracted-honey, at 6@8c; comb-honey in fair demand at 15@17c for choice, in a jobbing way. Beeswax is in good demand at 24@26c., for good to choice yellow.

C. F. MUTH & SON,
Corner Freeman & Central Aves.

CHICAGO, Mar. 23.—Demand at present not very active on comb honey. Fancy white, 17c; white, 16c; white, 2-lb. sections, 14c; buckwheat, 1-lb. sections, 12c; extracted, 7@8c. Beeswax, 28c.

S. T. FISH & CO., 189 S. Water St.

KANSAS CITY, Mar. 21.—Fancy white 1-lb. comb, 18c; fair to good, 17c; dark 1-lb., 14@15c; 2-lb. white comb, 15@16c; 2-lb. dark, 13@14c; extracted, white, 7c; dark, 5@6c.

HAMBLIN & BEARSS, 514 Walnut St.

CHICAGO, March 30.—There is the usual Spring demand for honey, and best white continues to bring 17@18c; honey that is off in color and condition sells for 2@3c less; very little call for dark comb. Extracted, is selling at 7@8c, in cans or barrels. Beeswax, 27@28c. Now is the time to get all comb-honey on the market, as after this month hardly any is sold.

R. A. BURNETT, 161 S. Water St.

BOSTON, Mar. 21.—Honey is in fair demand; supply short. White 1-lb. comb is very scarce and wanted, at 19@20c; fair to good, 18@19c; 2-lb. sections, 16@17c. Extracted, 8@9c. No beeswax on hand.

BLAKE & RIPLEY, 57 Chatham Street.

ALBANY, N. Y., March 21.—Honey market is slow, with small stocks of comb. We quote: White comb at 15@16c; mixed, 13@14c; dark, 12@13c. Extracted, light, slow at 7@8c; dark, firm at 6c. Beeswax, 26@30c.

H. R. WRIGHT, 326-328 Broadway.

We Club the *American Bee Journal* and the *Illustrated Home Journal*, one year for \$1.35. Both of these and *Gleanings in Bee Culture*, for one year, for \$2.15.

The Convention Hand-Book is received, and I am well pleased with it. Every bee-keeper should have a copy.

CHARLES WHITE.
Farmers' Valley, Nebr., Mar. 3, 1891.

Convention Notices.

§ The 5th semi-annual meeting of the Susquehanna County Bee-Keepers' Association will be held at Montrose, Pa., on Thursday, May 7, 1891.
H. M. SEELEY, Sec., Harford, Pa.

§ The Fourth semi-annual meeting of the Missouri State Bee-Keepers' Association, will meet at Boonville, Mo., on Thursday and Friday, April 9, 10, 1891. There are quite a list on programme for essays, including some from ladies. A cordial and pressing invitation is extended to all bee-keepers, and their wives and daughters, and any other ladies, to attend the Convention. Rates have been secured at the two leading hotels for those in attendance. Come, and let us get acquainted, and have an interesting meeting. J. W. ROUSE, Sec., Mexico, Mo.

Remember the sad experience of last season! Everyone should order all the Supplies necessary for the Apiary at once, and avoid "the rush." The delays and annoyances of last year should teach a valuable lesson in this line.

Red Labels are quite attractive for Pails which hold from 1 to 10 lbs. of honey. Price, \$1.00 per hundred, with name and address printed. Sample free.

Supply Dealers should write to us for wholesale terms and cut for Hastings' Perfection Feeders.

Calvert's No. 1 Phenol, mentioned in Cheshire's Pamphlet on pages 16 and 17, as a cure for foul-brood, can be procured at this office at 25 cents per ounce, by express.

Wants or Exchanges.

Under this heading, Notices of 5 lines, or less, will be inserted at **10 cents per line**, for each insertion, when specially ordered into this Department. If over 5 lines, the additional lines will cost 20 cents each.

WANTED—To sell Bronze Turkey Eggs from prize stock; \$3.00 per 13.
14A1t J. C. PROVINS, Masontown, Pa.

WANTED—Your wax to work up at lowest living prices. Please write at once to J. V. CALDWELL, Cambridge, Ills. 13A1f

WILL EXCHANGE Foundation for Wax or cash; will also make wax into foundation when sent to me, at the lowest price in the world. Send for samples and prices to JACOB WALLERSHEIM, Kaukauna, Wis. 13A4t

FOR SALE—Pure, home-made Blackberry Wine, for table or medicinal use. Warranted. Address R. E. PARCHER, Wausau, Wis. 13A3t

WANTED—To exchange 1-lb. thin Vander-vort f'd'n for 2 of wax. Samples and testimonials free. C. W. DAYTON, Clinton, Wis. 8A10t

Bee-Veils.—Mr. George E. Hilton, in an article in the *Michigan Farmer*, on the management of any apiary, writes thus:

After trying several bee-veils, I have decided on the "Globe" bee-veil. It was first invented as a protection against flies and mosquitoes; it was a success for this, so now the bee-keepers have adopted them. It is so fine you hardly discern anything before your face. It is very easily put together, no trouble to put on or take off, and folds up compactly in a paper box 6x7 inches, by 1 inch deep. The weight of the entire veil is only 5 ounces, and can be sent by mail for \$1.00. This looks like a big price, but with care one will last almost a life-time.

This is the universal opinion of the Globe bee-veil. It is superior to any other on the market.

We send both the Home Journal and Bee Journal for one year, for \$1.35.

The "Globe" Bee Veil

Price, by Mail or Express, \$1.00.



There are five cross-bars united by a rivet through their center at the top. These bars are buttoned to studs on the neck-band. The bars are of best light spring steel. The neck-band is of best hard spring brass. The cover is of white bobinet with black face-piece to see through.

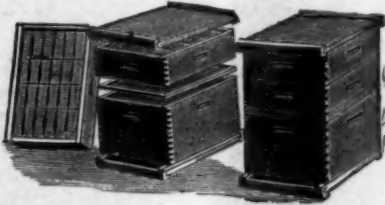
It is very easily put together: no trouble to put on or take off; and folds compactly in a paper box 6x7 inches, by one inch deep. The protection against bees is perfect—the weight of the entire Veil being only five ounces.

Extra Nets, 25 cents each.

CLUBBING OFFER.

We will send this Veil and the Bee Journal one year for \$1.75. Or, we will give the Veil **Free** for three (3) **New** Subscribers to the Bee Journal, with \$3.00 to pay for them.

Subscriptions to the Home Journal may be included in all Clubs, counting two (2) Home Journals as equal to one (1) Bee Journal.

Dovetailed Hives, Containing 8 Frames.

These Hives have become so popular that we have concluded to keep them for sale. All orders will be filled promptly.

No. 1, a complete $1\frac{1}{2}$ -story hive for comb-honey, includes bottom-board; body with 8 thick-top frames, division-board, 1 super with follower and wedge; 6 section-holders with tin separators, sections, and flat cover.

No. 2, is just the same as No. 1, and another super with contents added, making a two-story hive for comb-honey.

No. 5 is a 2-story hive for extracting, and includes bottom and flat cover, two bodies with 16 frames and two division-boards.

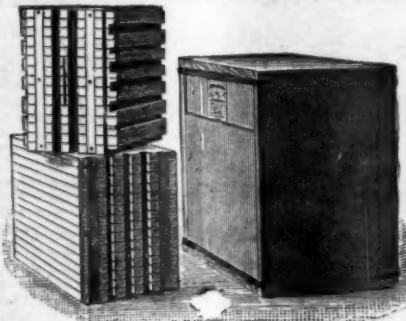
PRICES—COMPLETE HIVES, NAILED.

No. 1, \$1.50; No. 2, \$2.00; No. 5, \$1.60. We furnish the Separators and Sections at these prices, for the nailed hives.

PRICES—MATERIAL IN THE FLAT.

	No. 1.	No. 2.	No. 5.
1 Hive for.....	\$1.00	\$ 1.20	\$ 1.20
5 Hives for.....	4.50	5.50	5.50
10 Hives for.....	8.00	10.00	10.00

For 20 hives, deduct 2 per cent.
 For 30 hives, deduct 3 per cent.
 For 40 hives, deduct 4 per cent.
 For 50 hives, deduct 5 per cent.
 For 60 hives, deduct 6 per cent.
 For 80 hives, deduct 8 per cent.
 For 100 hives or more, deduct 10 per cent.



Five Hives in the Flat, Crated for Shipment.

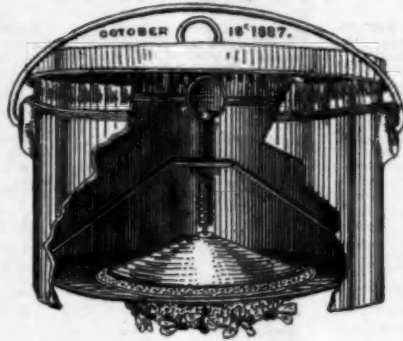
These Hives in the flat are packed ready for shipping in lots of 5 and 10, and all orders should be for a multiple of 5. Prices do not include Sections or Separators.

PRICES of one-piece Sections, $4\frac{1}{2} \times 4\frac{1}{4}$, to fill these hives, are \$2.00 for 500, and \$3.50 per 1,000, or 3,000 for \$9.00. Tin Separators, \$2.00 per 100.

THOMAS G. NEWMAN & SON,
 246 East Madison Street, - CHICAGO, ILL.

Hastings' Perfection Feeders

PATENTED.



THESE FEEDERS are now made with a capacity of two quarts, and the price is reduced to **30 cents** each, or \$3.00 per dozen, by express or freight. When ordered by mail, add 10 cents each for postage.

These Feeders can be re-filled without moving the Feeder, or disturbing the bees. The letting down of food is regulated by a thumb-screw. It is easy to regulate—either a quart or a spoonful can be given in a day or an hour, as may be required, and where it is most needed, over the cluster of bees. For rapid feeding, two Feeders may be placed over the bees at one time, not a drop of food can be lost, and robber bees cannot get at it. Special rates to dealers. Write for prices.

THOS. G. NEWMAN & SON,

246 East Madison Street, - CHICAGO, ILL.

NIAGARA FALLS SEED

CATALOGUE

FREE to ALL

Send now and learn how the business started when "a boy on a farm," and by trying the seeds you may know why the business rapidly grew. A pkt. each of our select strain of Early Jer. Wakefield cabbage, White Wonder bean, and Netted Giant melon. Illustrated Catalog, and a calendar with a picture of the Falls, all for **10 cents**, postpaid. Send now.

CHRISTIAN WECKESSER, Niagara Falls, N. Y.

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FRUIT
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BOOKS WORTH THEIR WEIGHT IN GOLD!
 BY MAIL POSTAGE PAID AT THE FOLLOWING PRICES:
 Ladies Guide to Fancy Work, Illustrated, \$.25
 How to Propagate and Grow Fruit, Ill'd, .25
 American Live Stock Manual, Illustrated, .25
 Guide to Profitable Poultry Raising, Ill'd, .25
 Employment Seekers Guide, New Opening, &c., .10
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 Waverley Novels, by Walter Scott, 20 Vols., 1.50
 The Western World, Illustrated, One Year, .25
 Sample Copy and 100 Page Catalogue, .10
 Chance to Save Money on a Thousand Articles, many of which we send free for a few Subscribers. Address **THE WESTERN WORLD, Chicago, Ill.**

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PATENTS, Caveats, and Trade-Marks procured, Rejected Applications Revived and Prosecuted. All business before the U. S. Patent Office promptly attended to for moderate fees, and no charge made unless Patent is secured. Send for "INVENTOR'S GUIDE."

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FRANKLIN H. HOUGH,
WASHINGTON, D. C.

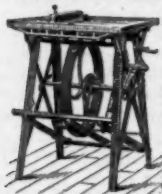
MARSTON'S
Hand and Foot-Power



MACHINERY

CIRCULAR Saw, Iron Frame, Steel Shafts and Arbors, Machine-Cut Gears, Iron Center-part in top. Send for Circular and Price-List. **J. M. MARSTON & CO.,**
21C13t 196 Ruggles St., BOSTON, MASS.

Barnes' Foot-Power Machinery.

Free.
45Ct

Address, **W. F. & JOHN BARNES,**
No. 196 Ruby St., Rockford, Ill.

Mention the American Bee Journal.

Western Bee-Keepers' Supply House

Root's Goods can be had at Des Moines Iowa, at **Root's Prices.** The largest supply business in the West. Established 1885. Dovetailed Hives, Sections, Foundation, Extractors, Smokers, Vests, Crates, Feeders, Clover Seeds, etc. Imported Italian Queens, Queens and Bees. Sample copy of our Bee Journal, "The Western Bee-Keeper," and Latest Catalogue mailed Free to Bee-keepers.

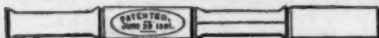
JOSEPH NYSEWANDER, DES MOINES, IOWA.

30Ct

J. FORNCROOK & CO.,

MANUFACTURERS OF THE

"BOSS" ONE-PIECE SECTIONS,



Will furnish you, the coming season, ONE-PIECE SECTIONS, sand-papered on both sides—as cheap as the cheapest, and better than the best. Write for prices.

Watertown, Wis., Dec. 1, 1890.

1C1y

GLEANINGS

— IN —

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